The Canadian Entomologist.

VOL. XIX. LONDON, SEPTEMBER, 1887. No. 9

SOME NORTH AMERICAN TACHINÆ.

BY BARON OSTEN SACKEN.

[The following paper was left by Baron Osten Sacken [O. S. had left Washington on Embassy about ten years earlier], with his collection of Diptera, in the charge of Dr. H. A. Hagen, of the Museum of Comparative Zoology, Cambridge, Mass., by whom it has been sent to us for publication. The description of the last species, *Tachina theclarum*, is by S. H. Scudder.—ED. C. E.]

Tachina (Exorista) futilis Say., MSS. ♂, ♀. Palpi, antennæ and legs black; face, front and last abdominal segment with a brassy-yellow reflection. Length, 7–10 m.m.

Bottom of the antennal foveæ silvery gray; the lower part of the cheeks likewise; front, lateral parts of the face and the orbit of the eyes below and behind (genal and occipital orbit) brassy-yellowish, the coloring of the front being of a more saturate yellow than the lateral parts of the face; above the antennæ, in the middle of the front, a brown stripe, attenuated posteriorly; it bifurcates on the vertex, enclosing the grayish ocellar triangle; the hind plane of the head (occiput) gray. The row of frontal bristles consists: 1st, of three bristles pointing backwards, the uppermost of which is placed on the top of the vertex; 2nd, of three shorter bristles pointing forward; 3rd, of four or five bristles which form diverging rows, descending on both sides of the antennæ, the last being a little below the end of the second antennal joint. Between the frontal bristles and the eyes, the front bears numerous little hairs; between these rows on the ocellar triangle is the usual pair of bristles pointing forwards. The females have three supernumerary pairs of larger bristles; the first is placed behind the upper corner of the eye, the two others between the frontal row and the orbit of the eye. Among the above described smaller hairs, immediately below the last bristle, the brassy-yellow color of the face shows a brown, changing spot, visible in an oblique light only; below this place, the lateral parts of the face are smooth; a short distance above the oral margin there is, on each side, the usual long bristle; above it, some shorter hairs reach to about one-quarter of the distance between the long bristle and the root of the antennæ. Antennæ black; second joint with a grayish pollen, and with a crest of short, stiff bristles; third joint long, with parallel sides, more than three times the length of the second, not quite reaching the edge of the mouth. Eyes distinctly pubescent.

Ground color of the thorax bluish black, almost concealed by five stripes of gray pollen, with intermediate black lines; the gray stripes are especially apparent when viewed obliquely from the posterior end of the body; in this light the median stripe appears bifurcate posteriorly; the next pair abbreviated posteriorly; the lateral pair very broad anteriorly, over the humeri. Scutellum bluish-black, with gray pollinose reflections; its tip faintly brownish; on the hind edge there are six bristles, the intermediate pair being the shortest; above this pair, on the plane of the scutellum, another similar pair. Pleuræ, grayish pollinose.

Abdomen black, marmorate with silvery gray; the fourth segment brassy-yellow. The whole abdomen is covered with dense short hairs; a pair of longer bristles near the hind margin of the first and second segments; a row of such bristles on the hind margin of the third segment, and a double row at the end of the fourth. Legs black; pulvilli brown; knees slightly brownish.

Wings: the first posterior cell open (closed by the prolongation of the costal vein, however, which nearly reaches the apex of the wing); the distance between the tips of the second and third veins is a little longer than that between the third vein and the apex of the wing; the elbow of the fourth vein without stump of a vein (a very minute one in one of the specimens); the great cross vein oblique, parallel to the last section of the fourth vein; small cross vein (in most specimens) opposite to about the middle of the distance between the tips of the auxiliary and first veins.

Bred from *Vanessa atalanta* (T. W. Harris and S. H. Scudder). Numerous specimens.

Tachina (Exorista) blanda, n. sp. ♂. Gray, thorax with four black stripes, the lateral ones broken in the middle; palpi and legs reddish; second and third abdominal segments with an additional pair of macrochetæ in the middle. Length 7 m.m.

Distribution of the frontal bristles as in *E. futilis* ♂, that is, on each side, beginning with the vertex, three longer bristles pointing backwards, three shorter bristles before the antennæ, and three or four bristles descending on the face, alongside of the antennæ. On the ocellar triangle, a pair of bristles pointing forward. Between the row of frontal bristles and the eyes, a few scattered microscopic hairs; sides of the face bare. Front, face and posterior orbit silvery white. Frontal stripe brown, rather narrow, enclosing posteriorly the grayish ocellar triangle. Antennæ black slightly tinged with brownish red on the two first segments; the third segment is very long, almost reaching the edge of the mouth. Only a few short bristles above the usual long oral bristle. Palpi, reddish yellow. Eyes pubescent.

Thorax gray, with a slight yellowish tinge from an oblique point of view; two slightly divergent black lines do not reach beyond the middle; two lateral black stripes are interrupted at the suture and prolonged beyond it to the hind border; these lateral stripes are broadest in the middle and end in a point, anteriorly and posteriorly. Scutellum gray; two pairs of large macrochetæ each side; a third intermediate, very small pair, on the apex.

Abdomen gray with, a slightly yellowish tinge, especially on the last segment; somewhat marmorate, with blackish crossbands on the hind margins of the segments, and a longitudinal blackish line; the crossbands appear more distinct and broader from an oblique point of view; the longitudinal line disappears when viewed sideways from above. A pair of macrochetæ on the hind margin of the first segment; two pairs on the second segment, one in the middle, the other on the hind margin; on the third segment, a pair in the middle, and the usual row on the hind margin; two rows on the fourth segment.

Legs: coxæ and femora reddish; tibiæ reddish-brown; tarsi brown. Pulvilli unusually large; ungues?

(The wings in the described specimen are injured.)

A single specimen, bred from *Cynthia cardui* (C. V. Riley.)

This species is like *E. futilis* in the distribution of the bristles on the front and in the structure of the antennæ. It differs in the presence of an additional pair of macrochetæ in the middle of the second and ot the third abdominal segments; also in the comparative smallness of the intermediate pair of macrochetæ on the apex of the scutellum.

Tachina (Exorista) hirsuta n. sp. ♀. Palpi, antennæ and legs black. Length 7 m.m.

Distribution of the frontal bristles like that in *E. futilis* ♀; that is, besides the usual row of bristles on the front, there is a second row of three bristles on each side, between the first row and the orbit of the eye; the upper bristle of this second row is placed near the upper corner of the eye, alongside of the upper bristle of the first row; the second and third bristles are inserted lower down on the front. The usual inner row of frontal bristles consists of three bristles on the vertex, pointing backwards, the upper one of which is the longest, and of six bristles below them, descending rather low on the face, considerably below the end of the second antennal joint. The pair of bristles on the ocellar triangle is present. Above the usual long bristle on each side of the oral border there is a row of small hairs, ascending along the ridge of the face, but not reaching the level of the lowest bristle of the frontal row. Antennæ black, third joint with parallel sides, broader than in *E. futilis* and *E. blanda*, but at the same time shorter, as it does not reach the oral border. First half of the arista remarkably stout; its basal joint long and distinct. Palpi dark brown or black. Face and front silvery; oral margin pale; frontal stripe brown; ocellar triangle blackish, grayish pollinose. Eyes pubescent. Thorax bluish-black, grayish-pollinose; two sub-parallel, soon interrupted, black stripes in the middle, and two less definite lateral stripes, black. Pleuræ black, with a light-grayish pollen. Scutellum black, grayish-pollinose, its hind margin yellowish; the two lateral pairs of macrochetæ rather long and strong; the intermediate one small; a pair of small macrochetæ on the disc. Abdomen black, marmorate, with grayish-silvery reflections, especially on the anterior borders of the segments; a pair of macrochetæ on the hind border of the first segment (I believe that I perceive them in my only specimen, although its abdomen is so much crowded against the scutellum that this character is not easily discernible); on the second segment, a pair of macrochetæ in the middle only; on the third, the usual row of macrochetæ along the hind border; on the fourth, a number of macrochetæ, giving it a bristly appearance; the smaller hairs of the abdomen are more erect, longer and bristle-like than in *E. futilis* or *E. blanda*. Feet black. Wings nearly as in *E. futilis*.

Bred from *Pieris rapæ* in April (Lintner).

Tachina deilephilæ, Riley MSS. ♀. Palpi yellowish; antennæ and legs black; face and front silvery; abdomen red on the sides; venter red. Length 7 m. m.

Face and front silvery, the latter with a blackish-brown stripe; ocellar triangle enclosed in the bifurcation of this stripe; the remaining portion of the vertex blackish; the rows of frontal bristles, on both sides of the frontal stripe, are short and inconspicuous superiorly, and only of moderate length near the antennæ. Of the three uppermost pairs of long bristles pointing backwards, which exist on the vertex in *E. futilis*, only the upper one is present; the lowest bristle of the rows is nearly opposite the end of the second antennal joint; there are but a few very inconspicuous hairs on the lower part of the front, between these rows and the orbit; nearer to the vertex, these hairs become more dense; a bristle above the upper corner of the eye (corresponding to a similar bristle in *E. futilis* ♀,) is present; the pair of bristles pointing forward on the ocellar triangle is also extant. Below the bristles the face is smooth, with but a few almost microscopic hairs; a short distance from the oral margin, there is on each side, the usual long bristle, above it some shorter hairs do not reach very high on the face. Antennæ black somewhat reddish on the incisure between the second and third joints; third joint with parallel sides, much shorter than the corresponding joint of *E. futilis* and not reaching the edge of the mouth by about one half of its own length. Eyes distinctly pubescent; palpi yellowish.

Thorax black, with the usual five stripes of gray pollen on the dorsum; scutellum with a brownish tinge, grayish-pollinose; bristles placed as in *E. futilis.* Abdomen blackish in the middle, reddish on the sides and at the tip; the red on the second and third segments occupying as much of the breadth of the dorsum as the black; the fourth segment is red, with elongated blackish spot in the middle of its base; all the segments with silvery-gray reflections. A row of bristles along the posterior margin of the third and on the fourth segments; the pairs of longer bristles on the first and second segments, which exist in *E. futilis*, are wanting here. Venter red, densly clothed with black hairs. Venation of the wings as in *E. futilis;* but the costal vein is not prolonged beyond the tip of the fourth vein; the great cross vein is distinctly bisinuate.

Bred from *Deilephila lineata* (C. V. Riley).

Three specimens.

The presence of only a single pair of long bristles on the top of the vertex, pointing backwards, and the absence of the pairs of macrochetæ on the first and second abdominal segments, prove that this species belongs, if not to a different genus, at least to a different section of a genus than *E. futilis.*

Tachina theclarum, parasitic on No. 30 *(Thecla inorata)*. Mr. W. Saunders. From life. Length 5 m.m.

Back of head steel gray, covered with short blackish hairs; front pale or whitish slate color, with darker reflections and with a vertical broad, blackish, frontal band; on either side a slightly curving row, outwardly concave, of black, curving, tapering bristles, directed upward, extending down the front from the summit to below the base of the antennæ; outside of the middle of this row a pair of similar downward directed bristles; a pair of downward directed bristles near the middle of the summit. Antennæ dark slate color. Eyes rich brown, covered with exceedingly delicate, short, white pile.

Thorax above dark brown with a hoary bloom, covered by frequent, erect, short, black hairs, and infrequent, decumbent, backward directed, large, black, tapering bristles; metanotum edged broadly behind with reddish brown; thorax and abdomen beneath piceous; covered profusely with long black hairs. Abdomen above shining piceous, first joint immaculate, second and third, especially latter, silvery or nacreous at base, obscure in the middle, fading out posteriorly; fourth segment nacreous at extreme base only; all profusely covered with long black hairs; second segment with a pair of erect, slightly curving, very long and tapering subdorsal bristles at the posterior border; third segment bristling with a transverse row of similar bristles, a dozen or more in number.

Legs black; claws black; pulvilli pale or colorless; tongue testaceous; covered profusely at tip with rather long colorless hairs; labial palpi blackish-brown.

SOME NOTES ON THE GENUS COLIAS WHILST ALIVE IN THE IMAGO STATE.

(Being extracts from a paper read before the Entomological Society of Ontario, Oct. 20th, 1886.)

BY GAMBLE GEDDES, TORONTO.

The paper which I have prepared to read upon the genus *Colias* differs from any that I have consulted up to the present time, in that it treats principally of the habits of the different species during lifetime in the imago state.

During the last ten years gigantic strides have been made by lepidop-